

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (Original) A terminal apparatus for an operator used when connected to an arbitrary node in a network system including a plurality of ring networks each of which includes a plurality of nodes connected to each other through a communication line,

said terminal apparatus for an operator comprising:

a display unit;

operating means for accepting click operations by a user;

information acquiring means for acquiring from a connected node notification information concerning a ring network to which said node belongs;

information processing means for managing occurrence statuses of failures in said network system based on said notification information acquired by said information acquiring means; and

display controlling means for displaying information processed by said information processing means on said display unit,

wherein said display controlling means displays a node icon associated with each node belonging to a ring network to which a node connected with its own apparatus belongs,

displays a line associated with said communication line between said node icons on said display unit, and

causes display modes of said node icon and said line to differ from each other depending on presence/absence of a failure in a corresponding node or communication line.

2. (Original) The terminal apparatus for an operator according to claim 1, wherein, when said each node includes a plurality of shelves,

said display controlling means displays a first window on a screen of said display unit if any of said node icons is clicked by said operating means,

displays in said first window a type drawing showing a shelf configuration of a node corresponding to said clicked icon, and

displays a plurality of shelves shown in said type drawing in display modes which differ from each other depending on presence/absence of a failure in each shelf.

3. (Original) The terminal apparatus for an operator according to claim 2, wherein, when each of a plurality of shelves includes one or a plurality of cards,

said display controlling means displays a second window on said screen of said display unit if any shelf shown in said type drawing is clicked by said operating means,

displays a view showing a card configuration of said clicked shelf in said second window in said display unit, and

displays a plurality of cards shown in said view of a card configuration in display modes which differ from each other depending on presence/absence of a failure in each card.

4. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system including a plurality of ring networks each of which includes a plurality of nodes,

said terminal apparatus for an operator comprising:

a display unit;

operating means for accepting click operations by a user;

information acquiring means for acquiring from a connected node notification information concerning a ring network to which said node belongs;

information processing means for managing statuses of said network system based on said notification information acquired by said information acquiring means; and

display controlling means for displaying information processed by said information processing means on said display unit,

wherein said display controlling means displays a ~~third~~ first window on a screen of said display unit, and

displays in said ~~third~~ first window a list of said notification information acquired by said information acquiring means in a text format together with a plurality of attributes characterizing each set of said notification information.

5. (Currently Amended) The terminal apparatus for an operator according to claim 4, wherein said display controlling means displays a ~~first~~ button on said screen of said display unit,

displays a ~~fourth~~ second window on said screen of said display unit when said ~~first~~ button is clicked by said operating means,

displays in said ~~fourth~~ second window an attribute specification section for arbitrarily selecting and specifying a plurality of said attributes, and

selectively displays in said first window notification information having attributes specified in said attribute specification section.

6. (Currently Amended) The terminal apparatus for an operator according to claim 4, wherein said display controlling means displays a ~~second~~ button on said screen of said display unit,

displays a ~~fifth~~ second window on said screen of said display unit when said ~~second~~ button is clicked by said operating means,

displays in said ~~fifth~~ second window a section for setting an order of displaying said attributes in said ~~third~~ first window, and

~~rearranging~~ rearranges said order of said attributes displayed in said ~~third~~ first window in accordance with an order set in said section.

7. (Currently Amended) The terminal apparatus for an operator according to claim 4, wherein said display controlling means displays a ~~third~~ button on said screen of said display unit,

displays a ~~sixth~~ second window on said screen of said display unit when said ~~third~~ button is clicked by said operating means,

displays in said ~~sixth~~ second window a list of nodes which are management targets of its own apparatus; and

wherein, when one or a plurality of nodes displayed in said ~~sixth~~ second window are specified by said operating means, said information acquiring means masks alarm information included in notification information transmitted from said specified nodes.

8. (Currently Amended) The terminal apparatus according to claim 4, further comprising: an informing buzzer which sounds under predetermined conditions; and

buzzer controlling means for controlling sounding of said informing buzzer,

wherein said display controlling means displays a ~~fourth~~ button on said screen of said display unit,

displays a ~~seventh~~ second window on said screen of said display unit when said ~~fourth~~ button is clicked by said operating means, and

displays in said ~~seventh~~ second window a condition setting section for setting conditions for sounding said informing buzzer; and

wherein said buzzer controlling means sounds said informing buzzer under conditions set in said condition setting section in said ~~second~~ window.

9. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system including a plurality of ring networks,

each of said ring networks including a plurality of nodes,

each node including storing means for accumulating a history of notification information concerning network management,

said terminal apparatus for an operator comprising:

a display unit;

operating means for accepting click operations by a user;

information acquiring means for acquiring from a connected node notification information concerning a ring network to which said node belongs;

information processing means for managing statuses of said network system based on said notification information acquired by said information acquiring means; and

display controlling means for displaying information processed by said information processing means on said display unit,

wherein said display controlling means displays ~~an eighth~~ a first window on a screen of said display unit,

displays in said ~~eighth~~ first window a retrieval condition specification section for specifying a retrieval condition for retrieving desired notification information from a history accumulated in said storing means;

wherein said information processing means retrieves notification information satisfying said retrieval condition specified in said ~~eighth~~ first window from a history accumulated in said storing means; and

wherein said display controlling means display a ~~ninth~~ second window on said screen of said display unit, and

displays in said ~~ninth~~ second window notification information retrieved by said information processing means in a text format together with a plurality of attributes characterizing said retrieved notification information.

10. (Currently Amended) The terminal apparatus for an operator according to claim 9, further comprising operating means for accepting click operations by a user,

wherein said display controlling means displays a ~~fifth~~ first button on said screen of said display unit,

displays a ~~10th~~ third window on said screen of said display unit when said ~~fifth~~ button is clicked by said operating means,

displays in said ~~10th~~ third window an attribute specification section for arbitrarily selecting and specifying a plurality of attributes, and

selectively displays in said ~~ninth~~ second window notification information having attributes specified in said attribute specification section.

11. (Currently Amended) The terminal apparatus for an operator according to claim 9, further comprising operating means for accepting click operations by a user,

wherein said display controlling means displays a ~~sixth~~ second button on said screen of said display unit,

displays an ~~11th~~ fourth window on said screen of said display unit when said ~~sixth~~ second button is clicked by said operating means, and

displays in said ~~11th~~ fourth window:

a section for specifying a node as an operation target and setting a maximum value of the size of a storage resource area of a history accumulated in said node; and

a section for individually setting the size of said storage resource area of a notification information history to be accumulated; and

wherein said information processing means can vary the size of said storage resource area of a history in an arbitrary node in accordance with the content set in said ~~11th~~ fourth window.

12. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system,

said network system including a plurality of ring networks,

each of said ring networks including a plurality of nodes,
each node including storing means for accumulating a history of notification information including at least quality information concerning communication quality in said network system,

said terminal apparatus for an operator comprising:

a display unit;

operating means for accepting click operations by a user;

information acquiring means for acquiring from a connected node notification information concerning a ring network to which said node belongs;

information processing means for managing statuses of said network system based on said notification information acquired by said information acquiring means; and

display controlling means for displaying information processed by said information processing means on said display unit,

wherein said display controlling means displays a ~~seventh~~ first button on a screen of said display unit,

displays a ~~12th~~ first window on said screen of said display unit when said ~~seventh~~ first button is clicked by said operating means, and

displays in said ~~12th~~ first window a retrieval condition specification section for specifying retrieval conditions for retrieving desired notification information from a history accumulated in said storing means;

wherein said information processing means retrieves notification information satisfying a retrieval condition specified in said ~~12th~~ first window from a history accumulated in said storing means; and

wherein said display controlling means displays in said ~~12th~~ first window said notification information retrieved by said information processing means in a text format together with a plurality of attributes characterizing said retrieved notification information.

13. (Currently Amended) The terminal apparatus for an operator according to claim 12, wherein said display controlling means displays an ~~eight~~second button on said screen of said display unit,

displays a ~~13th~~second window on said screen of said display unit when said ~~eight~~second button is clicked by said operating means, and

displays in said ~~13th~~second window:

an operation target specification section for specifying a node as an operation target and a channel and a section thereof;

a section for specifying whether notification is performed in accordance with each type of quality information measured with respect to an operation target specified in said operation target specification section;

a section for setting a level of importance in accordance with each type of quality information measured with respect to an operation target specified in said operation target specification section; and

a section for setting a threshold value used when performing notification for quality information measured with respect to an operation target specified in said operation target specification section; and

wherein said information processing means informs a node as said operation target of the content specified in said ~~13th~~second window and informs said node of quality information in accordance with said content.

14. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system including a plurality of ring networks, each of said ring networks including a plurality of nodes,

said terminal apparatus for an operator comprising:

a display unit;

information acquiring means for acquiring notification information respectively transmitted from a plurality of said nodes;

information processing means for managing occurrence statuses of alarms in said network system based on said notification information acquired by said information acquiring means; and

display controlling means for displaying information processed by said information processing means on said display unit,

wherein said display controlling means displays a ~~ninth~~ first button on a screen of said display unit,

displays a ~~14th~~ first window on said screen of said display unit when said ~~ninth~~ first button is clicked by said operating means,

displays in said ~~14th~~ first window:

a first section for specifying an operation target which is on a level of urgency of said alarm; and

a second section for selecting an occurrence cause of said alarm for said operation target specified in said first section, and

reads a current set state of a level of urgency of said specified occurrence cause of said alarm with respect to a node having said operation target and displays a list of reading result in accordance with each occurrence cause when said operation target and said occurrence cause are specified in said ~~14th~~ first window; and

wherein said information processing means causes an operator of its own apparatus to individually set a level of urgency in accordance with each occurrence cause of said alarm displayed in said list in said ~~14th~~ first window, and

sets a level of urgency in accordance with each set occurrence cause of said alarm with respect to a node as said operation target.

15. (Currently Amended) The terminal apparatus for an operator according to claim 14, wherein said display controlling means displays a ~~10th~~ second button on said screen of said display unit,

displays a ~~15th~~ second window on said screen of said display unit when said ~~10th~~ second is clicked by said operating means, and

displays in said ~~15th~~ second window a section for causing an operator of its own apparatus to specify a node as an operation target and a shelf thereof and set transmission or non-transmission of a maintenance signal to said specified operation target in said ~~15th~~ second window; and

wherein said information processing means sets the content set in said ~~15th~~ second window to a node including said operation target.

16. (Currently Amended) The terminal apparatus for an operator according to claim 14, wherein said display controlling means displays an ~~11th~~ second button on said screen of said display unit,

displays a ~~16th~~ second window on said screen of said display unit when said ~~11th~~ window button is clicked by said operating means,

displays in said ~~16th~~ second window a section for causing an operator of its own apparatus to specify a node as an operation target and a shelf thereof and set a threshold value of an alarm indicative of signal quality degradation with respect to said specified operation target, and

sets said threshold value set in said section to a node including said operation target.

17. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system,

said network system including a plurality of ring networks,

each of a plurality of said ring networks including a plurality of nodes and a traffic bypass function,

a plurality of said nodes being connected to each other in a ring form through a communication line in which a plurality of paths are multiplexed,

said communication line including a working system line and a preliminary line,

said traffic bypass function for causing service traffic transmitted through said working system line to make a detour to said preliminary line,

said terminal apparatus for an operator comprising:

a display unit;

information acquiring means for acquiring from a connected node notification information concerning a ring network to which said node belongs;

information processing means for managing statuses of said traffic bypass function in said network system based on said notification information acquired by said information acquiring means; and

display controlling means for displaying information processed by said information processing means on said display unit,

wherein said display controlling means displays a ~~12th~~ first button on a screen of said display unit,

displays a ~~17th~~ first window on said screen of said display unit when said ~~12th~~ first button is clicked by said operating means, and

displays in said ~~17th~~ first window an arrow associated with each path in a target ring network.

18. (Currently Amended) The terminal apparatus for an operator according to claim 17, wherein said display controlling means displays a ~~13th~~ second button on said screen of said display unit,

displays an ~~18th~~ second window on said screen of said display unit when said ~~13th~~ second button is clicked by said operating means, and

displays in said ~~18th~~ second window a section for causing an operator of its own apparatus to specify a transmission interval as an operation target and causing an operator of its own apparatus to set values of parameters concerning said traffic bypass function with respect to said specified operation target; and

wherein said information processing means sets said values set in said section with respect to a node concerning said operation target.

19. (Currently Amended) The terminal apparatus for an operator according to claim 17, wherein said display controlling means displays information indicative of a destination to which a path corresponding to said arrow displayed in said ~~17th~~ first window is dropped in association with said arrow.

20. (Original) The terminal apparatus for an operator according to claim 19, wherein said information indicative of a destination to which a path is dropped includes at least a low-speed side channel number to which said path is dropped and information indicative of a type of concatenation of said path.

21-24. (Canceled)

25. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system including a plurality of nodes each of which is provided with a plurality of boards,

said terminal apparatus for an operator comprising:

a display unit;

operating means for accepting click operations by a user;

information acquiring means for acquiring from a connected node notification information concerning said network system; and

display controlling means for display information processed by said information processing means on said display unit,

wherein said display controlling means displays a ~~14th~~ first button on a screen of said display unit,

displays a ~~19th~~ first window on said screen of said display unit when said ~~14th~~ first button is clicked by said operating means, and

displays in said ~~19th~~ first window a section for causing an operator of its own apparatus to select one of nodes existing in said network system and specify a board of said selected node; and

wherein said information processing means deletes said board selected in said ~~19th~~ first window from supervisory control targets of its own apparatus.

26. (Currently Amended) The terminal apparatus for an operator according to claim 25, wherein said display controlling means displays a ~~15th~~ second button on said screen of said display unit,

displays a ~~20th~~ second window on said screen of said display unit when said ~~15th~~ button is clicked by said operating means, and

displays in said ~~20th~~ second window a section for causing an operator of its own apparatus to specify an arbitrary node and specify a type of notification information transmitted from said specified node; and

wherein said information processing means reads set states of destinations of said notification information specified in said ~~20th~~ second window from said specified node and displays a list of said set states in said ~~20th~~ second window,

causes a user to set allowance or inhibition of notification of said specified notification information with respect to said destinations displayed as a list, and

sets the content set in said ~~20th~~ second window with respect to said specified node.

27. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system including a plurality of nodes,

said terminal apparatus for an operator comprising:

a display unit;

information acquiring means for acquiring from a connected node notification information concerning said network system;

information processing means for managing said network system based on said notification information acquired by said information acquiring means; and

display controlling means for displaying information processed by said information processing means on said display unit,

wherein said display controlling means displays a ~~16th~~ first button on a screen of said display unit,

displays a ~~21st~~ first window on said screen of said display unit when said ~~16th~~ first button is clicked by said operating means, and

displays in said ~~21st~~ first window a list of operators who are allowed to login to its own apparatus while associating a name of each operator with an expiration date of a password and an access level of said each operator.

28. (Currently Amended) The terminal apparatus for an operator according to claim 27, wherein said display controlling means displays a ~~17th~~ second button on a screen of said display unit,

displays a ~~22nd~~ second window on said screen of said display unit when said ~~17th~~ second button is clicked by said operating means, and

displays in said ~~22nd~~ second window:

a section for causing an operator of its own apparatus to input his/her name; and

a section for causing said operator to input his/her password and access level; and
wherein said information processing means newly registers said operator inputted in
said ~~22nd~~ second window as a user whose can login to its own apparatus.

29. (Currently Amended) The terminal apparatus for an operator according to claim
27, wherein said display controlling means displays an ~~18th~~ second button on said screen of
said display unit,

displays a ~~23rd~~ second window on said screen of said display unit when said ~~18th~~
second button is clicked by said operating means, and

displays in said ~~23rd~~ second window a section for causing an operator of its own
apparatus to select an arbitrary node in said network system;

wherein said information processing means reads a name of a terminal apparatus for
an operator registered in a node selected in said ~~23rd~~ second window from said selected node;
and

wherein said display controlling means displays in said ~~23rd~~ second window a list of
said name of said terminal apparatus for an operator read by said information processing
means.

30. (Currently Amended) The terminal apparatus for an operator according to claim
27, wherein said display controlling means displays a ~~19th~~ second button on said screen of
said display unit,

displays a ~~24th~~ second window on said screen of said display unit when said ~~19th~~
second button is clicked by said operating means, and

displays in said ~~24th~~ second window:

a section for causing an operator of its own apparatus to select an arbitrary terminal
apparatus for an operator in said network system; and

a section for causing an operator of its own apparatus to set an access level with respect to said terminal apparatus for an operator selected in said section; and

wherein said information processing means determines a node selected in said ~~24th~~ second window as a control target of said terminal apparatus for an operator selected in said ~~23rd~~ first window and registers it together with said selected access level.

31. (Currently Amended) A terminal apparatus for an operator used when connected to an arbitrary node in a network system including a plurality of nodes,

said terminal apparatus for an operator comprising:

a display unit;

information acquiring means for acquiring from a connected node notification information concerning said network system;

information processing means for managing said network system based on said notification information acquired by said information acquiring means; and

display controlling means for display information processed by said information processing means on said display unit,

wherein said display controlling means displays a ~~20th~~ first button on a screen of said display unit,

displays a ~~25th~~ first window on said screen of said display unit when said ~~20th~~ first button is clicked by said operating means,

displays in said ~~25th~~ first window:

a section for causing an operator of its own apparatus to select an arbitrary node in said network system;

a list of a current set status of an operation reference time in accordance with each node selected in said section; and

a section for causing a user to select an arbitrary apparatus from said list and causing a user to individually set an operation reference time with respect to said selected apparatus;
and

wherein said information processing means sets said operation reference time set in said 25th window with respect to said selected node.

32. (Cancel)